

CLAIMS

What is claimed is:

1. A method of producing a porous membrane, comprising the steps of:
 - (a) laminating a thick film onto a thin film, forming a laminate having a thick film side and a thin film side;
 - (b) directing laser energy onto the thin film side of the laminate until the laser has created a plurality of pores in the thin film.
2. The method of claim 1, wherein at least about 90% of the pores are complete.
3. The method of claim 1, wherein the thin film has a thickness in the range of about 10 μm to about 100 μm .
4. The method of claim 1, wherein the thick film has a thickness in the range of about 25 μm to about 200 μm .
5. The method of claim 1, further comprising:
 - placing said laminate onto a porous membrane such that said thick film side of said laminate is in contact with a first surface of said porous membrane; and
 - applying a vacuum to a second surface opposite said first surface of said porous membrane, thereby holding said laminate onto said first surface,wherein said steps are performed after step (a) and before step (b).
6. The method of claim 5, wherein said porous membrane is ceramic.
7. The method of claim 1, wherein the laser source is a UV excimer laser having a wavelength of 308 nm.
8. The method of claim 7, wherein the excimer energy density is from about 525 to about 725 mJ/cm^2 .

9. The method of claim 1, wherein the laser source is a neodymium-yttrium aluminum garnet laser providing a beam having a wavelength of 355 nm.

10. The method of claim 9, wherein from about 0.1 to about 10 mW of power is provided by said laser.

11. The method of claim 1, wherein the membrane is comprised of a material selected from the group consisting of polycarbonates, polyimides, polyethers, polyether imides, polyethylene and polyesters.

12. A container for aerosolizing a flowable liquid formulation for delivery into a patient, comprising:

(a) a sheet of flexible membrane material having an entrance side to which a flowable liquid formulation is applied under a pressure, an exit side from which aerosol is released, and a nozzle area, which nozzle area has a plurality of pores therein through which said formulation is extruded, wherein the flexible membrane material is a laminate formed by the method according to claim 1, wherein the laminate comprises a thick film and a thin film, and wherein the thick film serves as a barrier which is removed before extrusion of the formulation from the container;

(b) container walls connected to the sheet wherein a wall is collapsible by the application of a force; and

(c) a liquid formulation held within the container walls.

13. The container of claim 12, characterized such that a force of about 600 pounds per square inch (psi) or less collapses the container and forces the formulation out of pores of the membrane and aerosolizes the formulation in 2 seconds or less.